October-15-12 2:39:50 PM

91695

Item ID: **Revision ID:** D412-664-209TRN

Accept

N900040100

Setup Start

Item Name: Crosstube Turning Detail

Cust Item ID:

Customer:

Required Date: 29/10/2012

Start Date: 15/10/2012

Start Qty: 1.00 Req'd Qty: 1.00

Reference:

Approvals:

Process Plan: MLJ Date: 12-10-15 Tooling:

Date:

Start

Date:

SPC (Y/N):

Date:

Sequence ID/ Work Center ID

Operation Description

Set Up/ **Run Hours** Tool ID

Tool # Plan Code

Qty **Qty**

Run

Reject Reject Number

Stamp

Draw Nbr

Revision Nbr Rev B(DEO)

D412-664-249 100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.00

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA708

2-Turn first side as per Folio FA708 3- File transition lines smooth.

FOLIO REV:

DWG RĖV:

110

QC1- Inspect dimensions to dimension sheet

0.00

110

Memo

0.00

Quality Control

NCR:	Yes /	No				WORK ORDER NON-	-co	NFOR	MANCE / UPDA	ATE			
											QA Closed:	Date	:
Work Orde	er:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part N	 No					Rework Scrap Use-as-is Work Order Update	Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite			Į.	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other	
Root						ption of work order update		Initial	Action		Sign &		
Cause		Date	Step	Qty	(or Non-conformance	C	hief Eng	Descript	tion	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved							FAU	LT CATE	GORY				
Landir	ng Gea	r				General							
	Be Ce Cri Cri Cu He Ins	ending ntre No acks ushed/C ffs eat Tread spection oples in	Strip in Bend	Tube	/S	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instruct Mainte Mislabe Misread Offset	on Incomplete ions Incomplete/Unc nance led	clear	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct issing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	ĮΤο	rque W	aves in E	xtrusion		Drawing	I	Out of C	Calibration				

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Work Order ID 91695

October-15-12 2:39:50 PM

Quality Control

91695

Item ID: D412-664-209TRN Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail **Start Date:** 15/10/2012 Start Oty: 1.00 **Cust Item ID: Required Date:** 29/10/2012 Reg'd Oty: 1.00 **Customer:** Reference: Run Start Approvals: **Process Plan:** Tooling: Date: Date: Stop QC: SPC (Y/N): Date: Date: Sequence ID/ Operation Tool # Tool ID Set Up/ Plan Accept Reject Reject Insp. Work Center ID Description **Run Hours** Code Qty **Qty** Number Stamp 120 0.00 MORI SEIKI CNC LATHE LARGE *120* Mori Seiki 0.00 Memo gnaril 12/11/05 Mori Seiki CNC Lathe Large 1-Turn second side as per Folio FA708 2- File transition lines smooth. 3- Remove sand and plugs 4-Scribe part # and batch # using vibrating stylus as per Dwg D412-664-Inside of Cuff(Donot engrave on outside of tube) FOLIO REV: DWG REV: 130 QC1- Inspect dimensions to dimension sheet 0.00 QC 0.00 Memo

> anam. 6 12/11/05

							DQA:	Date:	
NCR: Yes	s / No			WORK ORDER NON	-CONFORI	MANCE / UPDATE	QA Closed:	Date:	
Work Order:				DISPOSITION		AGAINST D	EPARTMENT	/PROCESS	
Part No.			4	Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab noforming Finishing Large Fab Composite	-1	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root	į.			Description of work order update	Initial	Action	Sign &		
Cause	Date	Step	Qty	or Non-conformance	Chief Eng	Description	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training	·				1.				

Landing Gear General-Bending Bend Grain Pressure/Forced Ovalized Centre Not Concentric to O/S BOM/Route Over/Under tolerance Hardware Temperature/Cure Cracks Broken/Damaged Inspection Incomplete Part Incorrect Weld Crushed/Crimped. Burrs Instructions Incomplete/Unclear Part Lost/Missing Wrong Stock Pulled Cuffs Maintenance Part Moved Contamination Countersink Positioned Wrong **Heat Treat** Mislabeled Inspection Strip in Tube Other Cut Too Short Misread Power Loss/Surge Ripples in Bend Drill Holes Offset Torque Waves in Extrusion Out of Calibration Drawing Turning Sequence Finish Out of Sequence Folio Wave/Twist in Tube **Outside Dimensions**

FAULT CATEGORY

Unapproved

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

October-15-12 2:39:50 PM

Quality Control

Item ID: D412-664-209TRN Accept *N900040100* Setup Start **Revision ID:** Crosstube Turning Detail Item Name: 15/10/2012 **Start Date:** Start Otv: 1.00 **Cust Item ID: Required Date: 29/10/2012** Req'd Qty: 1.00 **Customer:** Reference: Run Approvals: **Process Plan:** Date: **Tooling:** Date: QC: SPC (Y/N): Date: Date: Sequence ID/ Operation Tool ID Reject Set Up/ Tool # Plan Accept Reject Insp. Work Center ID **Description Run Hours** Qty Code **Qty** Number Stamp 140 QC8- Inspect parts - second check 0.00 *140* 12-11-6 OC 0.00 Memo Quality Control 150 0.00 *150* HandFXtube 0.00 Memo Hand Finishing Crosstubes 1- PRESSURE WASH X-TUBE INSIDE AND OUT 2- ACID ETCH X-TUBE INSIDE AND OUT. USE RED SCOTCH BRITE 160 QC5- Inspect part completeness to step on W/O 0.00 OC

0.00

Memo

NCR:	CR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE												
										QA Closed:	Dat	e:	
Work Orde	er:				DISPOSITION	_		AGAINST I	DEF	PARTMENT	/PROCESS		
Part N					Rework Skid-tube Crosstube Scrap Machining Small Fab Thermoforming Finishing Composite Work Order Update Initial Action Action Composite Composit					Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier			Engineering Quality Other
Root Cause	Date	Step	Qty		ption of work order update or Non-conformance	1	Initial nief Eng	Action Description		Sign & Date	Verification		QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved											,		
						AUL	T CATE	GORY					
Landir		ot Conce	ntric to	o/s	General Bend BOM/Route		Grain Hardwa	<u></u>		Ovalized Over/Under	-	1	Pressure/Forced Temperature/Cure
	Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread			Part Incorrect Part Lost/Mi Part Moved Positioned V Power Loss/S	ssing Vrong		Weld Wrong Stock Pulled Other
-	⊣ ``	Vaves in E	xtrusio	n -	Drawing		Offset Out of C	alibration	-			100	

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

180

QC

120

Quality Control

October-15-12 2:39:50 PM Item ID: D412-664-209TRN Accept *N900040100* Setup Start **Revision ID:** Item Name: Crosstube Turning Detail Start Qty: 1.00 *1* **Start Date:** 15/10/2012 **Cust Item ID: Required Date:** 29/10/2012 Reg'd Oty: 1.00 **Customer:** Reference: Run Approvals: Process Plan: Date: Tooling: Date: QC: SPC (Y/N): Date: Date: Sequence ID/ Operation Set Up/ Tool ID Tool # Plan Accept Reject Reject Work Center ID Description **Run Hours** Code **Oty** Otv Number Stamp 170 0.00 Packaging *170* 12-11-7 Packaging 0.00 Memo Packaging Identify and stock in kanban rack Location: <u>L</u>6

0.00

0.00

QC21- Final Inspection - Work Order Release

Memo

Insp.

NCR:	ICR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE												
											QA Closed:	Dat	e:
Work Ord	er: _					DISPOSITION				AGAINST DE	PARTMENT,	/PROCESS	
	Part No. NCR No. Root Description Cause Date Step Qty					Scrap Machining Small Fab Use-as-is Thermoforming Finishing Work Order Update Large Fab Composite			Finishing	4	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other	
Root				:	Descri	ption of work order update		Initial	Action	n	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Ch	nief Eng	Descript	tion	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved		÷				· F/	AUL	.T CATE	GORY		,		
Landi	ng Ge	ear				General							
Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				D/S	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		1	on Incomplete ions Incomplete/Unc nance Ied	clear	Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned W Power Loss/S	st ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other	
	\dashv	orane W		vtrusion	, ⊢	Drawing	\vdash		alibration				

Outside Dimensions

Date:

Turning Sequence

Wave/Twist in Tube

Finish

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Picklist Print

October-15-12 2:39:53 PM

Work Order ID: 91695

Parent Item:

D412-664-209TRN

Parent Item Name: Crosstube Turning Detail

91695

D412-664-209TRN

Start Date: 15/10/2012

Required Date: 29/10/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:

IPP Rev:A New Issue 08-03-06 DD verified by:ec

IPP Rev B 08.04.02 Removed polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Status Issued	
D6009-129		— Manufactu	red No			110	Each	1.0000	1	1			
D6009_13	20								**				

Crosstube Material

Location Loc Oty Loc Code LG 69801

75630

1 mon L 12/11/1

Page 1

											DQA:	Date	:
NCR:	Yes	/ No				WORK ORDER NON-O	COI	NFORM	MANCE / UP	DATE			+
											QA Closed:	Date	:
Work Ord	lor:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS	
Part NCR	No.					Scrap Mach Use-as-is Thermofor Work Order Update Large			Machining Small Fab Prod. E			Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root						ption of work order update	1	Initial		tion	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Cr	nief Eng	Desci	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved											,		
					* +	F	AUL	T CATE	GORY				
Landi		Bending Centre No Cracks Crushed/O Cuffs Heat Trea Inspection	Crimped. t n Strip in		o/s	General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Instructi Mainte Mislabe Misread	on Incomplete ions Incomplete/U nance Ied	Jnclear	Ovalized Over/Under Part Incorre Part Lost/M Part Moved Positioned V Power Loss/	ct sissing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
ı	1 1	Ripples in	pena			Intili doles	1	Offset					

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	91695
Description: Crosstube Assembly (412 Low Aft)	Part Number:	D412-664-249
Inspection Dwg: D412-664-249 Rev: B		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

	spection Sheet	Tolerance	Actual	Accept	Reject	Method of	Comments
			Dimension			Inspection	
	0.625	+/-0.010	20033			vern	OWL-08
	2.680	+0.005/-0.000	2.683				
	2.680	+0.005/-0.000	2.684				
	2.687	+0.005/-0.000	2.690				
	2.793	+0.005/-0.000	2.758				
<	2.930	+0.005/-0.000	2.934				·
m T	3.067	+0.005/-0.000	3,071	~			
SIDE	3.205	+0.005/-0.000	3.206	/			
	3.358	+0.005/-0.000	3.363	$\overline{}$			
	3.378	+0.005/-0.000	3.382	/		,	
	3.500	+0.005/-0.000	3.500	7		U	
	0.625	+/-0.010	.625			vern	CNC-08
	2.680	+0.005/-0.000	2.684				11
	2.680	+0.005/-0.000	2-684				
į	2.687	+0.005/-0.000	2.691				
	2.793	+0.005/-0.000	2.798				
	2.930	+0.005/-0.000	2.936	~			
മ	3.067	+0.005/-0.000	3.071				
SIDE	3.205	+0.005/-0.000	3,208	′ /			
တ	3.358	+0.005/-0.000	3-361				
	3.378	+0.005/-0.000	3.379				
	3.500	+0.005/-0.000	3,500			<i>y</i>	
	0.127.82	+/-0.020	127.830			tape	16-22

											DQ	۹: Da	te:	
NCR:	Yes	/ No				WORK ORDER NON-	CO	NFOR	MANCE / UP	DATE				
											QA Close	d: Da	te:	
Work Ord	er.					DISPOSITION			<u> </u>	AGAINST D	EPARTMEN	IT/PROCESS		
Part I	No				· · · · · · · · · · · · · · · · · · ·	Rework Skid-tube Crosstube Scrap Machining Small Fab Use-as-is Thermoforming Finishing Work Order Update Large Fab Composite			Small Fab Finishing	- i	Water Jet rod. Eng. Coor. ore/Packaging Supplier		Engineering Quality Other	
Root					Descri	otion of work order update		Initial	, Ac	tion	Sign &			
Cause		Date	Step	Qty	c	or Non-conformance	Ch	nief Eng	Desc	ription	Date	Verificatio	n	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved														
							AUL	T CATE	GORY					
Landi	B C C C	ending entre No racks	t Concer Crimped.	ntric to (_	General Bend BOM/Route Broken/Damaged Burrs Contamination		1 '	on Incomplete ions Incomplete/I	Unclear	Ovalized Over/Und Part Incor Part Lost/ Part Move	Missing	Te W	ressure/Forced emperature/Cure feld frong Stock Pulled
	Πн	eat Trea	t Strip in	Tube		Countersink Cut Too Short		Mislabe Misread	led		Positioned Power Los	l Wrong		ther
		pples in	•			Drill Holes		Offset			J. 56. 203	-, · · D -		

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

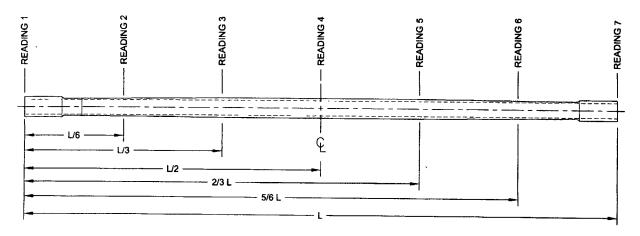
Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DART AEROSPACE LTD	Work Order:	91695
Description: Crosstube Assembly (412 Low Aft)	Part Number:	D412-664-249
Inspection Dwg: D412-664-249 Rev: B		Page 2 of 2

WALL THICKNESS MEASUREMENT



	WALL	THICKNESS	MEASUREMEN	NT (IN)	Deviation	
Location	w1	w2	w3	w4	Δw (max-min)	TOLERANCE
READING 1 L= 0"	,223	-226	-235	.234	1012	
READING 2 L= 19	, 233	-254	,253	-240	.621	
READING 3	.419	.424	.396	-392	.032	,
READING 4	.639	·645	-641	,634	-011	0.073"
READING 5	. 384	-414	.472	.469	1048	
READING 6	.210	. 234	-277	263	,067	<i>ž</i>
READING 7	.228	.237	-273	£22t	.013	*

Calibration Result

Actual Block Thickness: 400-750

Sitescan 250 Measured Thickness: 100 -750

Measured by: MM Ly	Audited by:	Preliminary Approval:	
Date: 2/11/06	Date: 12-11-6	Date:	

Rev	Date	Change	Revised by	Approved
Α	08.11.07	New Issue (P/O D212-664-209)	KJ/EC	
В	10.11.12	Dwg Rev updated	KJ A	1/
В	12.06.04	Wall thickness form added	KJ KJ	+ M
		·	1 NJ 79	

NCR:	Yes /	No No				WORK ORDER NON-	100	NFORI	MANCE / UPI	DATE			
									-		QA Closed:	Date	:
Work Ord	er:					DISPOSITION	7		·	AGAINST DE	PARTMENT	-	
Part I NCR I			•			Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite			-1	Water Jet d. Eng. Coor. e/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		nitial	Act	ion	Sign &		
Cause		Date Step Qty or Non-				or Non-conformance	Ch	ief Eng	Descr	ription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved								T CATE	CORV				
Landi	ng Ges					General	AUL	CATE	JONT			 	
Land	ding Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend					Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread Offset			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	⊢	Torque Waves in Extrusion				Drawing	П	Out of C	Calibration				

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

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Item	Qty -249	Part Number	Description
1	х	D412-664-249	CROSSTUBE ASSEMBLY (412 LOW AFT)
2		D6009-129	CROSSTUBE
3	2	D2856-600-1009	ABRASION STRIP
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D3595-063-570	RUBBER CUSHION
7	2	D3660-1	CUFF
8	44	CR3212-4-07	RIVET (OR M7885/3-4-07)
9	4	MS21920-28	CLAMP
10	2	MS21920-30	CLAMP (OR MS21920-32)
11	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC 299-947-100, TYPE II, CLASS 2 ADHESIVE)
12	A/R	SIKAFLEX-241/-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

GENERAL NOTES:

D

С

В

- 1) MATERIAL MANUFACTURED FROM D6009-129
- FINISHED LENGTH = 127 826±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH CHEMICAL CONVERSION COAT PER DART OSI 005 4 1 PRIME INSIDE AND OUTSIDE PER DART OSI 005 4 2
- PAINT OUTSIDE PER DART QSI 005 4 2
 TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- UNITS: INCHES UNLESS OTHERWISE NOTED. BREAK SHARP EDGES. 0.005 TO 0.010 MAX
- IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-249" AND BATCH NUMBER ON INSIDE OF CUFF
- USING VIBRATING STYLUS. WEIGHT. 42 5 lbs (PER IIN-D212-664)
- WEIGHT 12-25 SYMMETRIC ABOUT CENTERLINE
 WHEN MACHINING TAPER, RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALY, TRANSITION SHOULD BE SMOOTH.

- BE SMOOTH.

 1) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O D. EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.

 1) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.

 12) INSTALL D2896-1 SUPPORTUSING 0.03* TO 1.06* THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALL JATIONA MAD DIPLOTED TO ACCURAGING.
- D2896-1 HAT WILL BE IN CONTACT WITH THE CROSSIONE FOR VIOLE FOR 12 TOOMS AFTER INSTALLATION AND PRIOR TO PACKAGING.

 13) INSTALL MS21920-30 CLAMPS (OR 32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.

 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI
- 15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS 16) TORQUE CLAMPS 80 TO TRUTINED. ENSURE AT LEAST 1.3 FIREAUS SHOWING IN SAFELT RUB NOT BOTTOMED-OUT AFTER TORQUING 17) INSTALL D3680-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF
- SIKAFLEX-241/-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE SEAL EDGE OF CUFF TO ENSURE NO GAPS
- 18) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

SHOP CCAY RELURIT INChald hart. UNCONTROLLER SUBJECT TO ALAPS A SE WORK OK JOR MLJ NO. 91695 12-10-15

@DEO ATTACHED

n

В	REVISI STANE		IOTES; UPDATE TO CURRENT	RF	09.09.30	
A	NEWIS	SSUE		CP	07.07.07	
RÉV.			BY	DATE		
DESIGN		9	DART AEROSP	ACE	LTD	
DRAWN RF			HAWKESBURY, ONTAR			
CHECKE	D	qo	DRAWING NO.		REV. B	
MFG. AF	PR.	7	D412-664-249		SHEET 1 OF 4	
APPRO\	/ED	10	TITLE		SCALE	
DE APPR.			CROSSTUBE (412 LOW AFT)			
DATE	09.0	9.30	COPYRIGHT © 2007 BY DART A THIS DOCUMENT IS PRIVATE AND COMPOSED OF COMPUTE NOT TO BE USED FOR MAY PURPOSE ON COMPUTE ON	DON THE EXP	RESS CONDITION THAT IT IS OTHER PERSON WITHOUT	

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er: _													
er: _										QA Closed:	Da	ite:	
					DISPOSITION	_		AGAINS	T DE	PARTMENT	PROCESS		
Part No					Rework Scrap Use-as-is Work Order Update	Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite			b g	Prod. Eng. Coor. Rec/Store/Packaging			Engineering Quality Other
	Date	Sten	Otv		:	ł	1	Action Description		Sign &	Verification	n	QC Inspector
			<u> </u>		F	AUL	T CATE	ORY					
Landing Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend Torque Wayes in Extrusion					General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Inspection Instructi Mainte Mislabel Misread Offset	on Incomplete ons Incomplete/Unclear nance ed		Part Incorrect Part Lost/Mist Part Moved Positioned W	et ssing /rong		Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
	ng Ge	ng Gear Bending Centre No Cracks Crushed/C Cuffs Heat Treat Inspection Ripples in	Date Step Date Step Bending Centre Not Concer Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Ripples in Bend	Date Step Qty Date Step Qty Bending Centre Not Concentric to C Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend	No	Rework Scrap Use-as-is Work Order Update Date Step Qty Description of work order update or Non-conformance Fing Gear General Bending Gentre Not Concentric to O/S BOM/Route Cracks Broken/Damaged Crushed/Crimped Burrs Cuffs Contamination Heat Treat Countersink Inspection Strip in Tube Ripples in Bend Rework Scrap Use-as-is Work Order update or Non-conformance For General Bend BoM/Route Broken/Damaged Contamination Countersink Cut Too Short Drill Holes	Rework Scrap Use-as-is Work Order Update Date Step Qty Description of work order update or Non-conformance FAULT Step Step Qty Or Non-conformance FAULT Step Step Step Oty Or Non-conformance FAULT Step Step Step Step Step Step Step Step	Rework Scrap Use-as-is Work Order Update Date Step Qty Or Non-conformance Chief Eng FAULT CATEGORY Bending Gear General Bending Centre Not Concentric to O/S BOM/Route Broken/Damaged Inspection Grain Crushed/Crimped Burrs Inspection General Crushed/Crimped Burrs Inspection General Crushed/Crimped Cuffs Contamination Mainter Heat Treat Countersink Mislabel Inspection Strip in Tube Cuff Too Short Misread Ripples in Bend Drill Holes Offset	Rework Scrap Use-as-is Work Order Update Use-as-is Work Order Update Use-as-is Work Order Update Use-as-is	Rework Scrap Use-as-is Use-as-is Work Order Update Use-as-is Use-a	No. Scrap Use-as-is Work Order Update Use-as-is Work Order Update Step Qty Or Non-conformance Chief Eng Description Date Date Step Qty Description of work order update or Non-conformance Chief Eng Description Date	Rework Scrap Use-as-is Work Order Update No. Date Step Qty Description of work order update or Non-conformance Step Qty Or Non-conformance St	Rework Scrap Use-as-is Work Order Update Use-as-is Work Order Update Or Non-conformance O

Outside Dimensions

DQA:

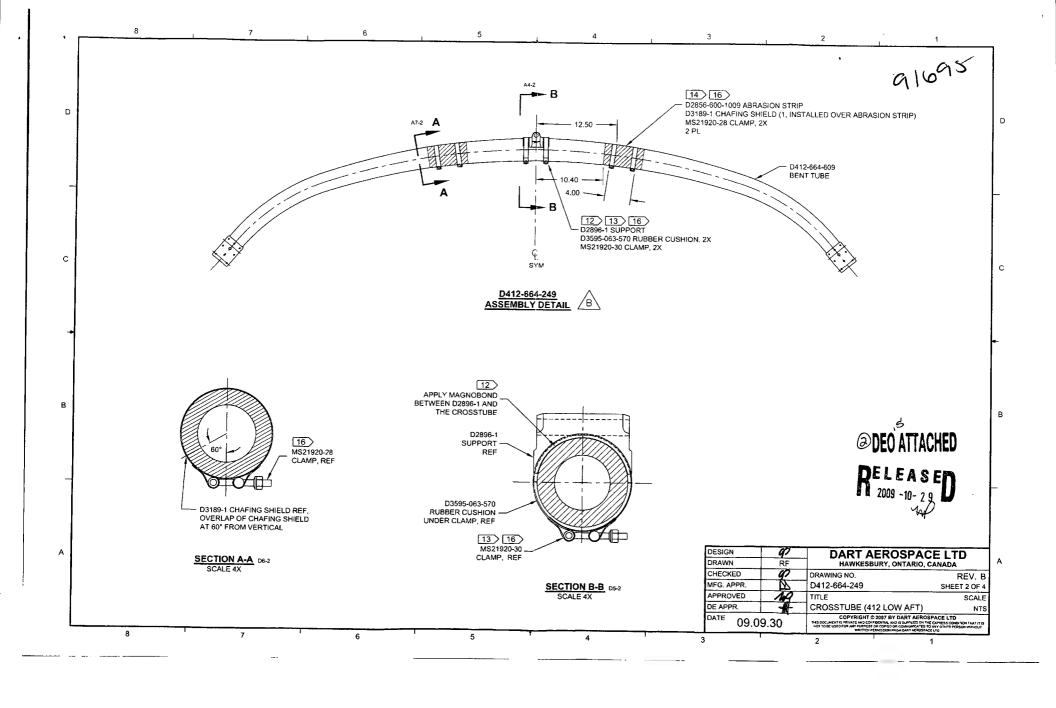
Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



										DQA:	Date:			
NCR:	Yes / No				WORK ORDER NON-	COI	NFOR	MANCE / UPDATI	E	•				
	-									QA Closed:	Date:			
Work Ord	or:				DISPOSITION			A	AGAINST DEPARTMENT/PROCESS					
Part i	No				Scrap Machining Small			osstube nall Fab inishing	Pro Rec/Stor	Engineering Quality Other				
NCR No.					Work Order Update Large Fab Co				mposite		Supplier			
Root		[Descri	ption of work order update		Initial	Action		Sign &				
Cause	Date	Step	Qty		or Non-conformance	Ct	nief Eng	Description	ı	Date	Verification	QC Inspector		
Doc/Data														
Equip/Tooling										:				
Operator														
Material														
Setup														
Other														
Process														
Supplier														
Training														
Unapproved														
					F	AUL	T CATE	GORY						
Landi	ng Gear				General		_					_		
	Bending				Bend		Grain			Ovalized		Pressure/Forced		
	Centre N	ot Concer	ntric to	o/s	BOM/Route		Hardwa	re		Over/Under	tolerance	Temperature/Cure		
	Cracks				Broken/Damaged		Inspecti	on Incomplete		Part Incorred	t	Weld		
·	Crushed/	Crimped.			Burrs		Instruct	ions Incomplete/Unclea	r [Part Lost/Mi	ssing	Wrong Stock Pulled		
	Cuffs				Contamination		Mainte	nance		Part Moved				
	Heat Treat				Countersink		Mislabe	led		Positioned W	/rong			

Misread

Out of Calibration

Out of Sequence

Outside Dimensions

Offset

Other

Power Loss/Surge

Turning Sequence

Wave/Twist in Tube

Ripples in Bend

Inspection Strip in Tube

Torque Waves in Extrusion

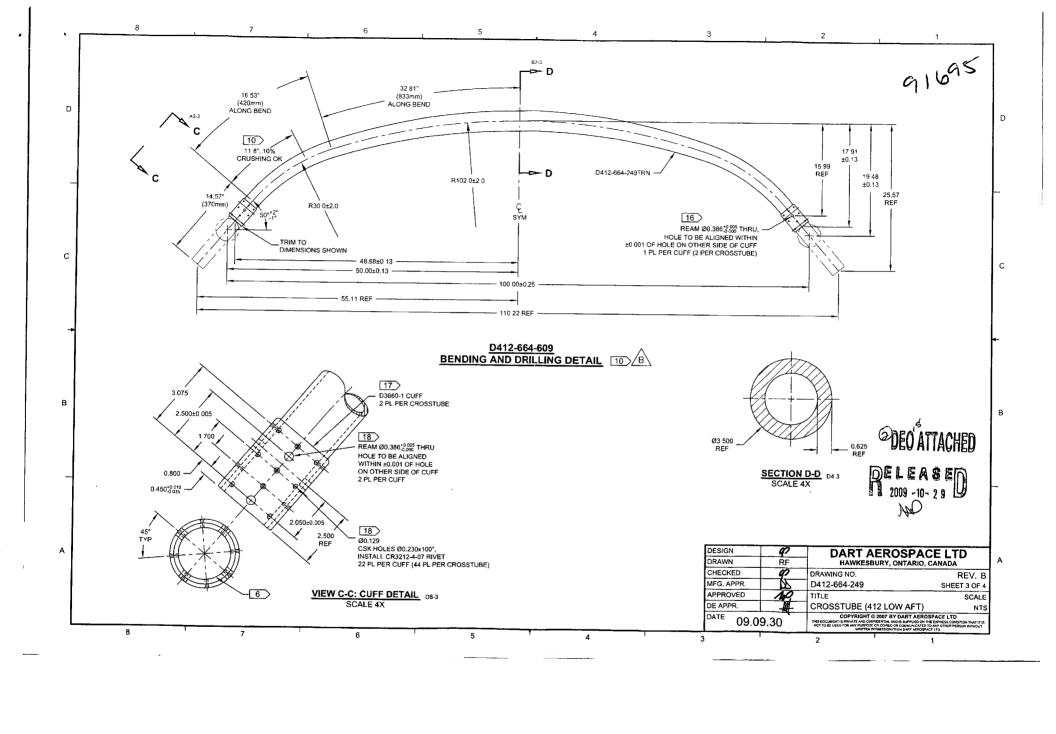
Cut Too Short

Drill Holes

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G



DQA:	Date:		

WORK ORDER NON-CONFORMANCE / UPDATE NCR: Yes / No QA Closed: Date: **AGAINST DEPARTMENT/PROCESS** DISPOSITION Work Order: Engineering Rework Skid-tube Crosstube Water Jet Machining Small Fab Prod. Eng. Coor. Quality Scrap Part No. Other Thermoforming Finishing Rec/Store/Packaging Use-as-is NCR No. Work Order Update Large Fab Composite Supplier Description of work order update Action Sign & Root 7 Initial or Non-conformance Chief Eng Description Cause Date Step Qty Date Verification QC Inspector Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved . . **FAULT CATEGORY Landing Gear** General Pressure/Forced Bend Grain Ovalized Bending BOM/Route Temperature/Cure Centre Not Concentric to O/S Hardware Over/Under tolerance Broken/Damaged Weld Cracks Inspection Incomplete Part Incorrect Crushed/Crimped. Wrong Stock Pulled Burrs Instructions Incomplete/Unclear Part Lost/Missing Cuffs Contamination Maintenance Part Moved **Heat Treat** Countersink Mislabeled Positioned Wrong Inspection Strip in Tube Cut Too Short Misread Power Loss/Surge Other Ripples in Bend **Drill Holes** Offset Drawing Torque Waves in Extrusion Out of Calibration

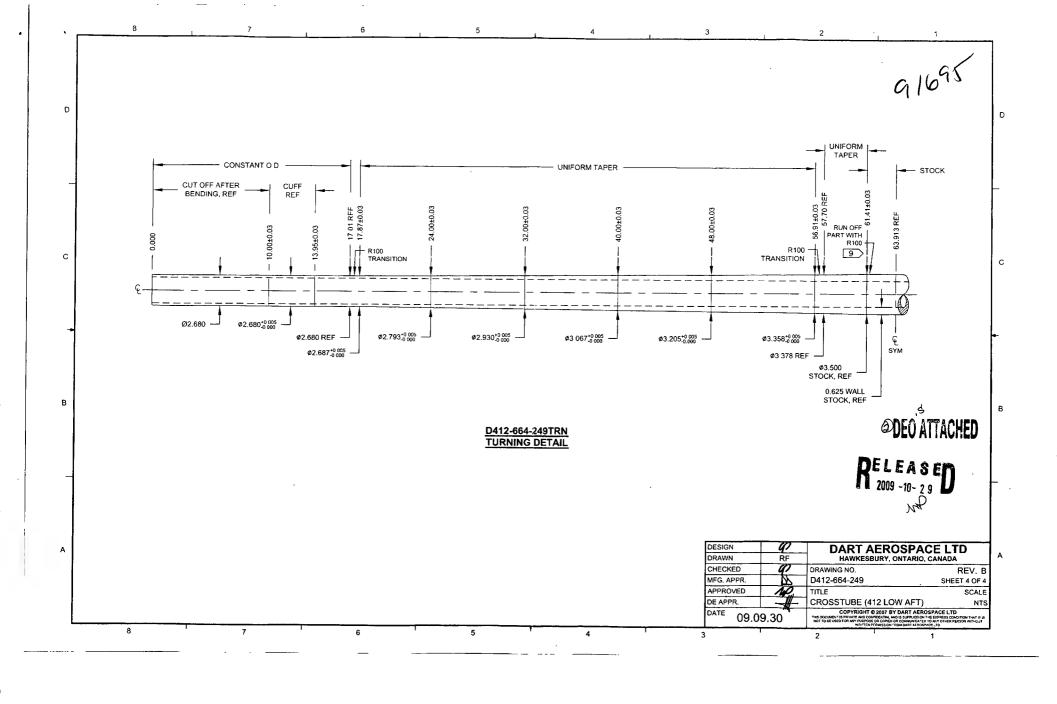
Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Finish



											DQA:	Date	e:		
NCR:	Yes /	No				WORK ORDER NON-O	COI	NFOR	MANCE / UPI	DATE					
								_			QA Closed:	Date	e:		
Work Ord	er.					DISPOSITION				AGAINST DE	NST DEPARTMENT/PROCESS				
Part	1 1 1 1					Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite			4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other		
Root					Descri	otion of work order update		Initial	Act	ion	Sign &				
Cause		Date	Step	Qty	C	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Inspector		
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved															
							AUL	T CATE	GORY						
Landi	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped.					General Bend BOM/Route Broken/Damaged Burrs		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear			Ovalized Over/Under Part Incorre Part Lost/M	ct	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled		
	Cuffs Heat Treat					Contamination Countersink		Maintenance Mislabeled			Part Moved Positioned V	Vrong			
	Inspection Strip in Tube Ripples in Bend			lube)	Cut Too Short Drill Holes		Misread Offset			Power Loss/	Surge _	Other		

Out of Calibration

Out of Sequence

Outside Dimensions

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING I	NO. TITLE			DADT AFROODAGE : T			
			REV. B	DART AEROSPACE LTI	D.E.O. NO.	SHEET NO.	SCALE
D412-664	-249 CROSS	STUBE ASS'Y (4	112 LOW AFT)	ENGINEERING ORDER	D412-664-249-B ₋ 1	SHEET 1 OF 2	NTS
DRAWN	P	CHECKED	Sc	MFG. APPR. R	APPROVED M	DE APPR.	
DATE	11.05.25	DATE	11.05.31	DATE ((.05.3)	DATE 11/05/37	DATE (1.05.3)	

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

91695

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

<u>IS:</u>

item	Qty -249	Part Number	Description
3	0	D2856-600-1009	ABRASION STRIP

WAS:

3	2	D2856-600-1009	ABRASION STRIP

NOTE 14, SHEET 1 IS AMENDED AS FOLLOWS:

<u>IS:</u>

14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.



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NCR:	Yes	/ No				WORK ORDER NON-	WORK ORDER NON-CONFORMANCE / UPDATE								
,,,											QA Closed:	Date	:		
Work Ord	ler:					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS			
Part NCR	No					Rework Scrap Use-as-is Work Order Update		Skid-tube Crosstube Machining Small Fab Thermoforming Finishing Large Fab Composite			Pro Rec/Sto	Engineering Quality Other			
Root					Descri	ption of work order update		Initial	Act	ion	Sign &				
Cause		Date Step Qty				or Non-conformance	CI	hief Eng	Descr	iption	Date	Verification	QC Inspector		
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved						F	AUI	LT CATE	GORY						
Landi	ing G	ear				General									
		Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread Offset			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	ct ssing vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other		
!	П	Torque Waves in Extrusion				Drawing		Out of C	Calibration						

Outside Dimensions

DQA:

Date:

Turning Sequence

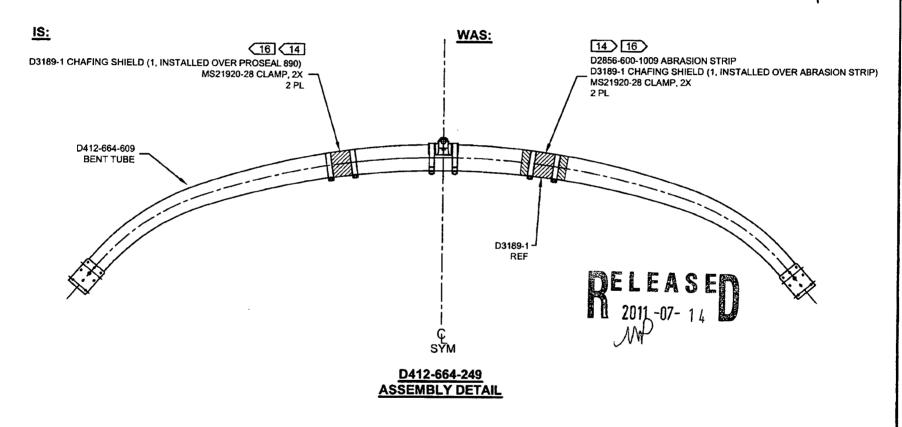
Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING	NO.	ITLE	REV. B	DART AEROSPACE L	.TD D.E.O. NO.	SHEET NO.	SCALE
D412-66	4-249 (CROSSTUBE ASS'Y (412 LOW AFT)	ENGINEERING ORDE	ER D412-664-249-B-1	SHEET 2 OF 2	NTS
DRAWN	P	CHECKED	Sc	MFG. APPR.	APPROVED (M)	DE APPR.	
DATE	11.05.2	5 DATE	11.05.31	DATE 11-05.3(DATE 11/05/3)	DATE 11.05,31	-

91691



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WITHTEN PERMISSION FROM DART AEROSPACE LTD.

NCR:	NCR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE												
•									-		QA Closed:	Date	:
Work Ord	ler: _					DISPOSITION	_			AGAINST DE	PARTMENT	_	
Part NCR						Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite		Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update		Initial	Actio	n	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Cl	nief Eng	Descrip	otion	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved	ing						EA111	LT CATEC	SORY				
Landi	ng Ge	ar				General							
	Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs Heat Treat Inspection Strip in Tube				O/S	Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned W Power Loss/S	ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
:	Ripples in Bend Torque Wayes in Extrusion				, <u> </u>	Drawing		Offset Out of C	alibration				

Outside Dimensions

DQA:

Date:

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING NO.	TITLE		DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-664-249	CROSSTUBE ASS'Y (412 LOW AFT)	ENGINEERING ORDER	D412-664-249-B-2	SHEET 1 OF 1	NTS
DRAWN 9	2 CHECKED	ASS	MFG. APPR. 💆	APPROVED A	DE APPR.	
DATE 11.0	0.07 DATE	11.09.19	DATE /(.09.19	DATE 11.09.19	DATE 11.09.19	

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

CHANGE:

IS:

item	Qty -249	Part Number	Description
11	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

			I "
11	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

NOTE 12 & 16, SHEET 1 IS AMENDED AS FOLLOWS:

IS

- 12) INSTALL D2896-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

WAS:

- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.



NCR:	ICR: Yes / No WORK ORDER NON-CONFORMANCE / UPDATE												
											QA Closed:	Date	2:
Work Ord	ler: _	-				DISPOSITION	_			AGAINST DE	PARTMENT	_	
Part I	-					Rework Scrap Use-as-is Work Order Update		Thern	Skid-tube Machining noforming Large Fab	Crosstube Small Fab Finishing Composite	4	Water Jet d. Eng. Coor. re/Packaging Supplier	Engineering Quality Other
Root					Descri	ption of work order update	T	Initial	Acti	on	Sign &		
Cause		Date	Step	Qty	(or Non-conformance	Cł	nief Eng	Descri	ption	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved								T CATEC	CORY				
Landi	ng G	ear				General	AUL	. CAIL	JONT				
		Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread Offset			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved Positioned V Power Loss/	et ssing Vrong	Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled Other
		orque W		xtrusio	, [Drawing		4	alibration				

Outside Dimensions

DQA:

Date: ___

Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING	NO	TITLE		DEV	DADTAF	DOODAGE	T D	I			
				REV. E	I DARIAE	ROSPACE L	שו	D.E.O. NO).	SHEET NO.	SCALE
D412-664	4-249	CROSS	TUBE (412 LO	W AFT)	ENGINE	ERING ORD	ER	D412-66	64-249-B-3	SHEET 1 OF 3	NTS
DRAWN	4	· 	CHECKED	_\$	MFG. APPR.	N	AF	PROVED	160	DE APPR.	
DATE	12.08.	21	DATE	12.08.30	DATE	12.08.30	DA	ATE.	12.08.30	DATE 12.08.30	

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890. UPDATE INSTALLATION OF CHAFING SHIELDS AND REDUCE TORQUE TO 40-50 IN-LBS. THIS ENGINEERING ORDER SUPERCEDES DEO D412-664-249-B-1

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

1 1 1

Qty -249	Part Number	Description
0	D2856-600-1009	ABRASION STRIP
-		-249



WAS:

. 3	2	D2856-600-1009	ABRASION STRIP

NOTE 14 AND 16 ON SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.
- 16) TORQUE CLAMPS ON D2896-1 SUPPORT 80 TO 100 IN-LB. TORQUE CLAMPS ON D3189-1 CHAFING SHIELD 40 TO 50 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

WAS:

- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

NCR:	Yes / No				WORK ORDER NON-	CO	NFORM	MANCE / UPDATE		•		
					-					QA Closed:	Da	te:
Work Ord	er:				DISPOSITION			AG	AINST DE	PARTMENT	/PROCESS	
Part I	No				Rework Scrap Use-as-is Work Order Update	Machining Small Fab Prod. Eng Thermoforming Finishing Rec/Store/Pac Large Fab Composite S				Water Jet d. Eng. Coor. re/Packaging Supplier	Quality Other	
Root				Descri	ption of work order update		Initial	Action		Sign &		
Cause	Date	Step	Qty	(or Non-conformance	Cł	nief Eng	Description		Date	Verificatio	n QC Inspector
Doc/Data												
Equip/Tooling												
Operator												
Material		-										
Setup												
Other												
Process												
Supplier												
Training							İ					
Unapproved							T CATE	CORV				<u> </u>
11:						AUI	LT CATE	JUKY				
Landir	ng Gear Bending			<u> </u>	General Bend		Grain		Γ	Ovalized		Pressure/Forced
		Not Conce	ntrin ta O	,c	BOM/Route		Hardwa		-	Over/Under	talaranaa	Temperature/Cure
	Cracks	NOT CONCE	ntric to O,	/³ —	Broken/Damaged	-	4	on Incomplete	-	Part Incorred		Weld
		/Crimped.			Burrs	-	-1	ions Incomplete/Unclear	-	Part Lost/Mi		Wrong Stock Pulled
ŀ	Cuffs	, crimpeu.	•		Contamination		Mainte			Part Moved	331118	wrong stock rulled
	Heat Tre	at			Countersink	\vdash	Mislabe		-	Positioned W	Vrong	
}		at on Strip in	Tube	-	Cut Too Short	-	Misread		-	Power Loss/	-	Other
}	Ripples	•	iube		Drill Holes		Offset		L	J. 0WC1 1033/.	Juige	Other
ŀ		Naves in E	vtrusion	-	Drawing	\vdash	4	alibration				

Out of Sequence

Outside Dimensions

DQA:

Date:

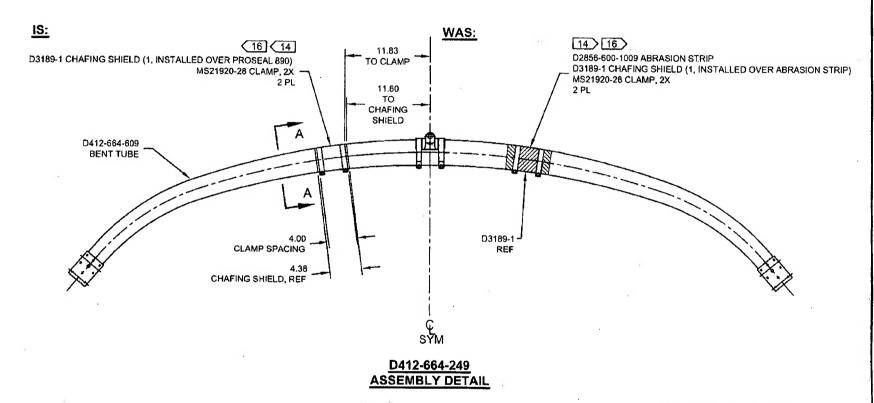
Turning Sequence

Wave/Twist in Tube

Finish

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

DRAWING NO. TITLE REV. B DART AEROSPACE LTD D.E.O. NO. SHEET NO. SCALE D412-664-249 **CROSSTUBE (412 LOW AFT) ENGINEERING ORDER** D412-664-249-B-3 SHEET 2 OF 3 NTS 47 DRAWN. CHECKED MFG. APPR. APPROVED DE APPR. 12.08.21 DATE DATE 12.08,22 DATE 12.08.29 12.08.29 DATE 12/18.29 DATE



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											DQA:	Date	e:	
NCR:	Yes	/ No				WORK ORDER NON-C	OI	NFOR	MANCE / UP	DATE	3	<u></u>		···
											QA Closed:	Date	9:	
Work Ord	or.					DISPOSITION				AGAINST DE	PARTMENT	/PROCESS		,
Part I	- No					Rework Skid-tube Crosstube Scrap Machining Small Fab Thermoforming Finishing Work Order Update Large Fab Composite		Water Jet Prod. Eng. Coor. Rec/Store/Packaging Supplier		_	ring ality ther			
Root					Descri	ption of work order update		Initial	Act	tion	Sign &			
Cause		Date	Step	Qty	c	or Non-conformance	Ch	nief Eng	Descr	ription	Date	Verification	QC Ins	pector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved					*									
							AUL	T CATE	GORY					
zandi		Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped. Cuffs				General Bend BOM/Route Broken/Damaged Burrs Contamination		Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance			Ovalized Over/Under Part Incorred Part Lost/Mi Part Moved	et [Pressure/F Temperatu Weld Wrong Sto	ire/Cure
		Heat Treat				Countersink	\vdash	Mislabe			Positioned V		_	
	-	nspection	•	Tube	!	Cut Too Short	-	Misread		<u></u>	Power Loss/	Surge	Other	
		Ripples in	Bend			Drill Holes	1	Offset						

Out of Calibration

Out of Sequence

Outside Dimensions

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

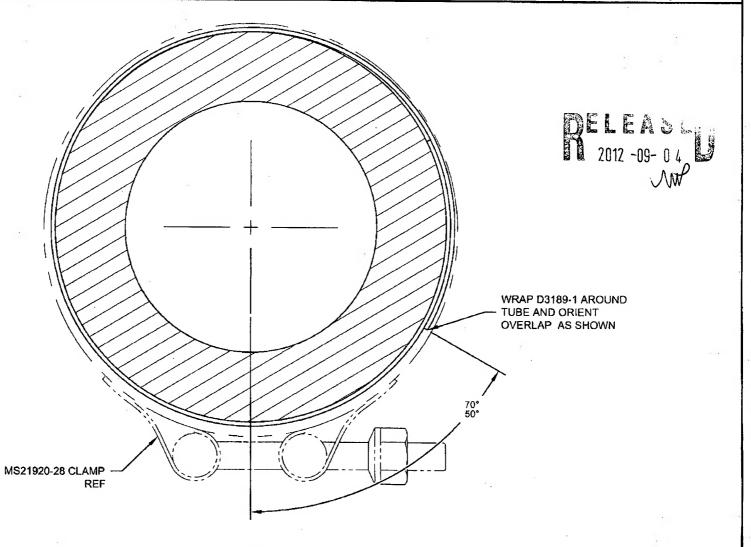
Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish

DRAWING N			REV. B	DART AEROSPACE LTD	D.E.O. NO.	SHEET NO.	SCALE
D412-664	-249 CROSS	TUBE (412 LOV	V AFT)	ENGINEERING ORDER	D412-664-249-B-3	SHEET 3 OF 3	NTS
DRAWN	q)	CHECKED	ہے	MFG. APPR.	APPROVED AND	DE APPR.	
DATE	12.08.21	DATE	12.08.22	DATE 12.08.29	DATE 12.08.29	DATE 12.08.29	



SECTION A-A CHAFING SHIELD DETAIL VIEW ROTATED, NOT TO SCALE

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NCR:	Yes	/ No				WORK ORDE	R NON-C	CON	IFORI	MANCE / UF	PDATE			
												QA Closed:	Date:	
Work Order:						DISPOSITION			AGAINST DEPARTMENT/PROCESS					
Part No					Rework Scrap Use-as-is Work Order Update			Machining Small Fab Thermoforming Finishing		Crosstube Small Fab Finishing Composite	Prod. Eng. Coor. Rec/Store/Packaging		Engineering Quality Other	
Root		14:5	200		Descr	iption of work order	update		nitial .	A	ction	Sign &		
Cause		Date	Step	Qty		or Non-conformanc	e	Chi	ief Eng	Des	cription	Date	Verification	QC Inspector
Doc/Data Equip/Tooling Operator Material Setup Other Process Supplier Training Unapproved				7		dyn.	•							
							F/	AUL'	T CATE	GORY				*
Landi		g Gear Bending Centre Not Concentric to O/S Cracks Crushed/Crimped Cuffs Heat Treat Inspection Strip in Tube Ripples in Bend				General Bend BOM/Route Broken/Damaged Burrs Contamination Countersink Cut Too Short Drill Holes			Grain Hardware Inspection Incomplete Instructions Incomplete/Unclear Maintenance Mislabeled Misread Offset			Ovalized Over/Under tolerance Part Incorrect Part Lost/Missing Part Moved Positioned Wrong Power Loss/Surge		Pressure/Forced Temperature/Cure Weld Wrong Stock Pulled

Out of Calibration

Out of Sequence

Outside Dimensions

DQA:

Date:

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev G

Turning Sequence

Wave/Twist in Tube

Torque Waves in Extrusion

Drawing

Finish